THE

VETERINARY JOURNAL

Editor:

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Editorial.

LOOKING FORWARD.

THE popular Parisian prophetess, Madame de Thebes, recently deceased, is said to have predicted that the war would come to an end in 1917. Let us hope it will, and that when it ends, crowned by a glorious victory for the Allies, we shall have got rid of the slackness, as a Nation, that has distinguished 1916, and have profited by the lessons learned in the expensive school of experience. Nothing but a cataclysm could have got us out of the old unproductive and profitless ruts and the upheaval has come by a quicker way and in a manner different from what we expected.

Agriculture, commerce and organisation, instead of being treated as side lines are now to be given the status and significance in the State that only a stupid and perverse blindness and inertia have prevented us from recognising and uplifting ages ago. We are concerned in the revival, and we hope that we may be found awake and alert and able to take a profitable and praiseworthy hand in the ploughing of the productive furrows. Years ago, John Bright said in one of his prophetic speeches—"The time will come when your mansions will be deserted and your factories silent, and your country will be a corn-producing and exporting one, depending for its

existence solely on its agricultural produce." That period may be far off, but the day for the uplifting of agriculture looks as though it has already arrived. Food control is no good without greatly increased food production, and in the lucid words of the Prime Minister "every available square yard must be made to produce food, and labour available for tillage should not be turned to more ornamental purposes until the food necessaries of the country have been adequately safeguarded." All the activity got going, and with a real live head at the Board of Agriculture there ought to be hopeful and happy days in store for us. The Board has often been the butt of sarcasm and ridicule, but then it has perhaps never been remembered that no Government Department has suffered more from chameleon-like changes of head. Nothing very stable can result where alteration of directing and planning is constantly occurring, and surely it is time the Board of Agriculture was given a cardinal place in the Departments of State and more continuity of direction in its work.

The times before us are pregnant with possibilities and fraught with great issues and we hope that 1917 will be the commencement of an era of plenteous work and renewed prosperity for us. We want, however, to keep our claims in the limelight and be stern and earnest in our endeavours to secure the work in the Kingdom that is ours by right and by ability. All movements to supplant us must be determinedly met and charlatans posing in our domains must be sent to the right about, hence the importance of supporting our Council financially. G.M.

ANTI-VIVISECTION.

The following reply was sent by Mr. Scott, F.R.C.V.S., to the circular from the Anti-Vivisectionists, published on pp. 416 and 417 of our December issue:—

To the Secretary, World's League against Vivisection for the protection of animals.

SIR,—Last winter I was veterinary officer in charge of a mule depot carrying over a thousand mules. A specific infectious and highly-dangerous disease broke out on the depot,

necessitating the picketing of every mule. These mules remained picketed all through the cold, wet winter months, and in exposed areas, and not a single mule died from such exposure. On the other hand, had picketing measures not been enforced the disease would undoubtedly have spread, necessitating the destruction of many mules, and consequent loss to the State, but what is perhaps more important, the disease in question often runs a latent and insidious course, consequenty many mules, *apparently* healthy, would have been issued to other units, thereby spreading the disease broadcast. I appreciate your efforts of sympathy towards the servant and friend of man, but I cannot subscribe to any League whose endeavours, however well intended, would diminish in the smallest possible degree the efficiency of any government department whose primary object is to win the war at all costs. I beg, therefore, to give you my experience of picketing for what it is worth on the principle that an ounce of experience is worth a pound of mis-applied sentiment.

Yours very truly,

WM. SCOTT, F.R.C.V.S.

Bridgwater.

ERRATA.

On p. 399, John Vincent Holland, M.R.C.V.S., should be Lieut. J. V. Holland, V.C. Lieut. Holland was formerly a student at the Liverpool University.

On p. 405, lines 1 and 23, read sodium nitrite, instead of sodium nitrate.

On p. 405, bottom line, read .5 per cent. instead of 5 per cent.

On p. 407, Vesi*cal* instead of Vesi*cle*.

The Value of the Intra-Dermo-Palpebral Method of Malleinisation.

In the December Number of the VETERINARY JOURNAL, in the article on the above subject by Major Hobday, it should have been stated that the original research which resulted in the adoption of the intra-dermo-palpebral method, was the work of M. Naudinat, a note of it being first published in a communication made before the Société Centrale de Médecine Vétérinaire, on the 17th of July, 1914.

The advantages of the method were at once recognised, and the colloboration and further research of M. Victor Dronin, established its value beyond question in eradicating glanders from the large omnibus and tramway studs of Paris.

Original Communications.

WAR PICA.

By R. C. G. HANCOCK, Capt. A.V.C.

TWO autumns spent at the front among artillery horses has given the writer some experience of colic, and especially of a colic due to accumulation of inorganic material in the large colon.

He would venture to dilate on this affection, in the nature of comments upon the exemplary article by M. F. Friez on the subject of Sand Colic. It is assumed that this article has been studied by those who read the following.

That at the front a number of cases of colic, with a large proportion of fatalities, is due to impaction of the second portion of the large colon with inorganic material, is well known. The nature of the accumulation depends upon the nature of the soil upon which the animals are stationed. Its location is due to the fact that the large colon bends upwards upon itself at the pelvic flexure, becoming considerably narrower at this point. Passing ingesta thus flowing from a large to a small tube have also to climb uphill and round a sharp corner. Hence heavy material is likely to slip back again during this passage, and any quantity is likely to remain there and accumulate, unable to negotiate the passage.

Etiology. (1) Food. The army ration, particularly of hay, is about adequate (for light draught horses) under summer conditions. Place these same horses, as they often are placed at the end of autumn and early winter, in an open field, without protection from wind or rain. The army ration becomes insufficient to supply the demand for extra animal heat, work and other conditions remaining as usual. The animals become perpetually hungry. One observes practically every horse in his idle moments between feed times, licking at and ingesting the mud and sodden turf upon which he stands. This is not pica in the true sense, for it is not morbid appetite, simply the unsatisfied physiological appetite of a stomach that calls to be filled. Place hay before these horses, and as long as it is there, or so long as they have their fill of it,

this so-called pica will not be observed. The writer suggests, *faute de mieux*, the term war pica for this condition, for it is essentially a condition associated with campaigning.

(2) Feeding off the ground. This is a far less important factor in the causation of this so-called sand colic, than the insistence on its avoidance in his division led the writer at first to expect. Considerable observation of horses feeding off the ground, both hay and oats, convince him that horses are extraordinarily deft in their avoidance of gathering foreign material when so feeding, and that aggregation of sand is hardly likely to be due to this cause, save after a very long period perhaps.

3. Water. This, if muddy, is undoubtedly a cause. But as this colic is so frequently encountered where the water is beyond reproach, it may be considered a subsidiary factor, and is not encountered where discipline and management are up to standard.

It cannot be too often reiterated that in the writer's opinion sand colic in the Army is due to pica, and pica in turn is attributable to environment and conditions at the time rendering the ration insufficient for the animal's needs.

Symptoms. It is doubtful whether the terms complete and incomplete obstruction bear examination. From the facts it appears that colic is evidence of a complete obstruction. Granted that this may be momentary, or of a few hours' duration only; but in any case for the time being it is complete.

The fact appears that when the aggregation reaches a certain bulk, the animal stands in danger at any moment of a temporary or (at the worst) permanent obstruction of the bowel at the pelvic flexure. When this occurs colic is evidenced shortly, and continues until the obstruction passes on, falls back, or is overcome by treatment.

The symptoms thus show themselves seriatim from mere uneasiness to acute agony, and one case may run the gamut of almost all the known symptoms of colic.

Yet constantly one may rely on encountering the following at any stage. Harsh staring coat, hide-bound skin, mouth with more or less dirt inside, rectum gives gritty sensation to hand and arm. Presence of impacted mass before pelvic flexure.

Diagnosis.—This depends on the last-named symptoms and is usually easy. The complications that ensue vary with individual cases, which can only be recognized on their respective merits.

Prognosis.—Impossible.

Lesions.—As described by Mons. Friez.

Treatment.—(a) Preventive: Hay, little and often, in haynets, the idea being to keep horses occupied with food as many hours in day as possible. Supplement army ration to every possible extent, wind shelter, head cover, hot feeds occasionally. Remove to solid standings whenever possible. Water: if incriminated disciplinary measures against watering from shell holes, driving into streams, etc., are usually effective.

(b) Curative. The following is as near a specific as the writer knows.

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Ol. Ricini	...	...	...	...	℥vi.

Copious warm enemata are invaluable. It is astonishing what a horse can hold if instructions as given by M. Friez are faithfully followed.

Massage of impacted bowel, massage (not surface rubbing) of abdominal wall, hot packs, freedom to roll at will. In some cases a sharp trot or even a canter bring prompt relief.

Finally, rectal examination of horses in like conditions will show those to which it may be advisable to administer a purge as a preventive measure.

STRICTURE OF THE PYLORUS IN CATTLE.

By PETER WILSON, M.R.C.V.S.,
Lanark.

IN the following note I will endeavour to draw as accurate a picture as possible of an uncommon disease affecting cattle, which I have not seen described in any professional literature to which I have had access. It may nevertheless be quite well known, and if this be so I can only ask the indulgence of your readers.

I have not seen many cases of the disease, and the first one I saw I failed to arrive at an accurate diagnosis.

History.—When first called into the case, one is generally told that the cow has not appeared quite her usual self for a day or two; has been dull, off her food, given rather less

milk, and is somewhat constipated, or has not been passing a normal quantity of fæces, although of normal consistence.

Symptoms.—The cow, to look at, does not seem to be seriously ill. The eye is dull, general appearance sluggish, surface temperature somewhat irregularly distributed, and fæces seen, appear to be well digested, but small in quantity.

The pulse is about 72 per minute. The temperature and respirations are normal. Auscultation of the stomachs shows normal movements of the rumen, but very weak movements of the omasum.

Observation of the contour of the abdomen shows that the left side over the rumen is full, but that there is not so much distension on the right side as one would expect from the small quantity of fæces said to have been passed for a day or two. At this stage one is liable to set it down as a case of atonic indigestion, and to expect a dose of medicine, followed by some stomachics to put the animal all right.

However, on visiting the case again three or four days later, one gets the following history:—The physic worked normally. The cow ate well for a day or two after, and looked like making a good recovery, but somehow she has gone back into a state pretty much like her previous condition. She is again only passing fæces seldom, and in smaller quantities than is to be expected, considering the amount of food she has been taking. The surface temperature has been changeable. She is again giving less milk than normally.

An examination reveals the pulse, temperature, respirations, and the shape of the abdomen nearly similar to their condition at the first examination. Another dose of purgative medicine is given, and the stomachic powders are made so as to be laxative.

Again there is improvement for some days, to be followed by another relapse into an unsatisfactory state.

This alternation of improvement and relapse may go on several times without much alteration in the general state of the animal. But after the second or third dose of medicine each subsequent dose is noticed to bring away a smaller quantity of fæces, and the improvement is of shorter duration. There is also noticed to be a change in the contour of the abdomen. The appetite fails and rumination ceases.

It generally takes three or four doses of medicine before one sees any diminution of the bulk of the rumen, even although after the third dose the cow may not be eating very much. The rumen about this time begins to act less forcibly and less frequently than normal.

It is quite evident now that the rumen is getting empty (even very much so) from the hollow appearance of the left side; and because of the small effects of the medicine administered, one wonders where the contents of the rumen are going to, until one begins to realize that the right lower part of the abdomen is becoming enlarged and depressed looking, and very hard, even solid, to the touch over the seat of third and fourth stomachs.

I detected the hardness here in my first case when auscultating the region by the ear. It was so unusual a sensation that it led me to have a good look at the abdomen, when the change in shape, stated above, was noticed, and the hardness could be felt quite easily by the hand. Auscultation also now reveals the absence of all peristalsis in this region.

When this stage is reached, purgative medicine produces no result except the passing of some liquid in which there may be floating some particles of unmasticated straw.

Still for a day or two longer the rumen gets emptier, the left side more hollow, and the right side of the abdomen fuller and more depressed, before much change is seen in the general condition of the animal, except that it has lost some condition and is weaker.

However, about this time, there is an increase in the pulse rate, up to 85 or 90; the temperature goes up to 103 or slightly over, and the respirations get a little more frequent than normal. In a day or two now one finds speedy alterations for the worse. The pulse advances to 100-120; the temperature goes up to 104-105; the respirations become very fast; there is a grunt, and some pain may be manifested on pressure over the right anterior part of the belly.

The case is now evidently complicated with inflammation, and before long death ends the scene.

Post-Mortem.—On a post-mortem being made, when the abdomen is opened one is absolutely astounded at the enormous

size of the third and fourth stomachs. At the first glance they look like the rumen, but the rumen, because of its small size, is quite inconspicuous. On removing the abdominal organs for more minute examination, the rumen is found to be very small and nearly empty, the second stomach not departed from the normal, the third and fourth stomachs are, however, greatly distended. The third may be three times its normal size, and the fourth is as large as the third, if it is not larger. The bowels are entirely empty.

On opening the third and fourth stomachs, they are found to be distended with practically the normal contents of the rumen: that is, the contents of the rumen have passed into them without having been rechewed. The contents of these stomachs are therefore very coarse.

On removing the contents, there does not appear to be any disease about the third stomach further than the alteration in size and shape. The fourth stomach, besides being greatly changed in shape, shows some inflammation of the mucous membrane of the pyloric half. Manipulation of the pylorus and a short distance of the duodenum shows marked thickening and hardness of the tissues. The pyloric orifice is so small that one has considerable difficulty in forcing a finger through it into the duodenum.

On splitting it open there is seen what appears to be a great increase of fibrous tissue from the submucous coat outwards. The mucous and submucous coats show recent inflammation with inflammatory exudation into them. The signs of acute inflammation extend for some inches along the duodenum.

In one case a piece of coal, the size of a hazel nut, was fixed in the entrance to the pylorus, and the mucous membrane had on it a superficial ulcer. The other internal organs appear to be perfectly normal.

The post-mortem makes the symptoms easily understood.

The disease begins as a slow chronic inflammation of the pylorus, which causes no symptoms until it has advanced sufficiently to produce more or less obstruction. It is then the symptoms of indigestion and constipation are noticed. The constipation is more apparent than real, being due to the slow passage of the contents of the fourth stomach into the bowels,

reducing the amount of their contents, and giving rise to less frequent evacuations.

Laxative doses of physic and stomachics relieve the condition for a short time only. The animal soon becomes as bad as ever.

The third stomach is inhibited to compensate for the state of the fourth, and rumination is less active so that the rumen does not become emptied as quickly as one would expect at the commencement of the disease. But as the disease progresses the inhibition in the third stomach appears to be removed or paralysed, and for this reason and, further, because the rumen never ceases altogether to act until the very end, the contents of the rumen pass on without being remasticated and become lodged in the third and fourth stomachs, and gradually produce the distension of these stomachs, until their dimensions become something enormous.

Except close to the pylorus, the contents of the third and fourth stomachs are as coarse as the contents of the rumen.

The pressure and irritation of the contents cause acute inflammation of the fourth stomach and pylorus. This, perhaps, combined with some auto-intoxication, causes the great increase of the pulse rate, high temperature, frequent respiration and grunt, with other symptoms of acute pain, and leads to a rapid death, owing to the weak state of the patient by this time.

The disease runs a course of between two and three weeks.

Treatment.—So far treatment in my hands has been unsuccessful. I have tried oil, Epsom salts, treacle, aloes, aloin and calomel at different times, in doses sufficient to open the bowels. As stomachics, sodii. bicarb., potass. bicarb., ammon. carb., ammon. chlor., potass. chloras. sodii. hyposulphis, aloes, aloin, ipec, belladonna ext., nux vomica and vegetable bitters in various combinations have been given. Hot cloths to the belly and blisters over the third and fourth stomachs have been applied when any signs of pains were seen. Death however has always been the end sooner or later.

From the post-mortem findings, it appears to me that the disease is not likely ever to yield satisfactorily to medicinal

treatment, unless it be to that of potassium iodide, which might be tried on a very valuable animal.

Surgical intervention, even if it were possible, would not pay anyone.

The disease might be named stricture, stenosis or simply obstruction of the pylorus in cattle.

THE TREATMENT OF GANGRENOUS MAMMITIS IN CATTLE.

By J. H. RIPLEY, M.R.C.V.S.,
Hurst Green, Sussex.

WHILST the cause of this condition is obscure and the diagnosis fairly easy, the successful treatment of the disease is not always certain. In a small percentage of cases nature herself would prevent a fatal result, but in most instances it is only by surgical interference that death can be averted. Gangrene of the gland takes place before the skin becomes similarly affected, and the cow is very seriously ill from septicæmia. Hence, if one waits for gangrenous skin before incising, there is less chance of a cure. On the other hand, the vascular condition of the skin of the udder hinders the unrestricted use of the knife during the initial stages. I have recently had three cases; one was lost due to waiting, and two recovered by adopting the following treatment.

As soon as diagnosis was certain, chiefly by noting the thin, bloody fluid obtainable from the teat in conjunction with the general symptoms of septicæmia, some five or six deep narrow incisions were made into the udder substance by means of an abscess knife. These were about 2 inches deep, but only large enough to admit the nozzle of a brass (pint) enema syringe. These wounds were then syringed three times a day with hypochlorous acid solution.

℞	Calx Chlorinat	ʒi.
	P.Ac. Boric	ʒi.
	Aq.	Oiv.

Next day, and on subsequent visits, the punctures were enlarged, and eventually by joining one to another, a long (6 or 7 inches) skin incision was formed.

Adhesions of the gland to the skin that could *easily* be broken down by the fingers were thus dealt with, but undue eagerness in this direction produced copious bleeding, which had to be checked by plugs of tow soaked in turpentine and oil.

The continued syringing with the lotion and turpentine internally completed the cure—the dead gland-substance sloughed out of the skin wound, and healing occurred.

The chief points are that this method allows active treatment to be begun early, and that a lot of manual interference in getting the gangrenous gland away is avoided, also the condition can often be limited to one-quarter, whereas otherwise it usually tends to affect both quarters on one side.

This is one more instance of the value of hypochlorous acid solution in the separation of gangrenous from healthy tissues.

TRAUMATIC DIVISION OF THE DEEP FLEXOR TENDON BELOW THE INSERTION OF THE SUPERFICIAL DIGITAL FLEXOR.

By J. V. LACROIX, D.V.S., Prof. of Surgery,
Kansas City Veterinary College.

THIS cumbersome title designates an affection of which comparatively little has been written, but a condition that always causes the practising veterinarian real concern, particularly when he handles his first case of the kind. The matter and manner of caring for such a wound, because of the character of the structures involved, and the peculiar function of the deep flexor tendon (particularly its function in relation to the maintenance of the foot in its normal position) constitute problems that seem almost insuperable. The open tendon sheath and the probability of purulent synovitis resulting; the likelihood of extensive adhesions occurring, even though the subject should not succumb to the ravages of the affection; and the cost of efforts to properly treat the wound and to keep the patient comfortable throughout a protracted period of convalescence, are questions that present themselves to the practitioner and tax his judgment and discrimination.

Fortunately, such cases are of infrequent occurrence, and

when observed, in some instances, they are obviously so hopeless that the victims are humanely destroyed forthwith. In parts of the United States where barbed wire is employed for fencing pastures and even paddocks and narrow lanes, horses sometimes paw into the lowermost wire on such fences; and as soon as the pain inflicted by the barbs is felt, when this happens, the subject immediately makes violent efforts to free himself, the result is that a deep lacerated wound is made and the tendon may be divided. This particular injury, however, is only one of the many types of wounds that are so occasioned. As a result of runaways, with ploughs, disc harrows or other farming implements, this sort of injury is occasionally produced. Suckling colts that are allowed to follow their dams in meadows at mowing-time may be cut with the sickle and injured in this manner. So in one way or another, horses, young and old, suffer this trauma, and, unfortunately, in some instances, the gravity of such affections is not appreciated by the owner, and an already difficult case is complicated by delay in calling the veterinarian.

The true character of the wound is at once evident in such cases, because of the unnatural position of the toe—raised from the ground when weight is borne by the affected member. Depending upon the length of time that has elapsed since the wound has been inflicted, so its appearance varies. This, however, differs in no wise, in such cases, from other wounds of the extremity wherein the tendon sheath has been invaded. Such wounds are always contaminated and often, because of the lacerated condition of the parts, contagium is distributed into innumerable recesses and cleansing the wound is rendered very difficult.

Complete division of the deep flexor tendon of the digit (perforans) below the point of insertion of the superficial flexor (perforatus), in addition to causing an open tendon sheath, severs the only structure which maintains the normal relation between the second and third phalanges (ossa corona and pedis).

To maintain the divided ends of the tendon in position of constant approximation necessitates the fitting of a specially constructed shoe with raised heel and braces for the extremity, all of which requires an expenditure of time and energy that

are considerable. And, furthermore, the subject is occasioned much distress by the constant pressure of these rigid appliances and the unnatural position that the foot is forced to assume. Experience has taught the writer that the use of special shoes and rigid braces are certainly unnecessary in such cases in colts, and, in handling a few of these cases in mature and aged subjects, it was found that other means are probably preferable in most instances in these subjects as well.

A prerequisite in the successful handling of these cases, of course, is the thorough cleansing of the wound as soon as possible after it has been inflicted. While a delay of as much as a week's time is not necessarily cause for unfavourable outcome, yet, disinfection of wounds so neglected is almost impossible, and chances for recovery are greatly diminished.

The subject should be cast and properly restrained. The region surrounding the wound must be freed from hair for a distance of several inches; pledgets of cotton saturated with a suitable antiseptic solution (formalin, one to two-thousand serves well) are used to cleanse the area surrounding the wound; all shreds of tissue are trimmed away with scissors and, in wounds of several days' standing, the curette may be necessary to remove necrotic tissue and eschars. The wound is then bathed with tincture of iodin. Two or three minutes' time are allowed for the drug to contact all accessible parts and the skin surrounding the wound is also moistened with the tincture. Having in readiness a good, long-fibre cotton, the practitioner would do well to apply a large quantity of this material around the extremity. The wound and a sufficiently large area adjoining the wound is so completely invested with the cotton that contamination of the injured tissues is impossible as long as the parts are thus protected.

Forty-eight hours afterward the animal is again cast (if it is not very tractable) and conditions are noted. If one has been thorough in the initial wound cleansing, little pus will have been produced. And if the wound is in a reasonably good condition, it is simply mopped with pledgets of cotton, thoroughly moistened with tincture of iodin and rebandaged. If, on the other hand, there are copious quantities of pus present, in addition to the aforementioned treatment, tincture of iodin is carefully injected into the tendon sheath with an

ounce syringe. As much as two ounces of the tincture may be employed in this manner with profit and the cotton and bandages are then immediately applied.

In the badly infected wounds it is necessary to dress the parts twice weekly subsequent to the second handling of the subject. But in wounds that are promptly attended to after injury, weekly dressing is sufficient, and, ordinarily, four or five treatments are all that is required. The last dressing is kept in position for two or three weeks, and, thereafter, protection for the wound is unnecessary.

During the time of treatment, colts are given the freedom of a clean and roomy box stall. Horses that are broken to halter and to harness may be supported with slings, in front-foot affections, and also when a pelvic member is so wounded, if subjects derive more comfort from this manner of treatment.

It has been apparent to the writer that time given to cleansing wounds at the first treatment is profitably spent. In fact, thorough cleansing of these wounds is a determinant factor. Likewise, great care in keeping the parts free from contamination after they have been disinfected is necessary. Rigid appliances are unnecessary to keep the ends of the divided tendon in approximation. In young animals (up to three years of age), at least, such means are of no use. And, finally, regeneration of destroyed tissue and complete restoration of function succeeds proper treatment in the majority of cases within from two to six months' time.

Clinical Cases.

"SNORING IN CATTLE."

By J. H. PARKER, M.R.C.V.S.,
Faringdon.

YEARS ago, when I first commenced practice, we used to attribute this disease to a tumour in the throat, and in bad cases advised slaughter. After reading a description of the disease and means of operating, by Mr. C. J. Cunningham, of Slateford, I had to go at it, and was surprised to find what a comparatively easy operation it was, and one which gave

great satisfaction to the client. The following is a typical case. On October 1st last, called to a two-year-old Shorthorn heifer, said to have a rattling in the throat. Heifer otherwise all right. Advised a wait and see policy. The noise in the throat gradually increased, until she began to snore badly and cough when feeding, and breathe through her mouth, her cheeks puffing out with each expiration. I was certain then there was an abscess in the throat, and told the owner so. After fasting twelve hours we cast her by the Russan method, and chloroformed her. Putting a Revelation mouth-gag in her mouth, I could easily feel the abscess in the roof of the pharynx. This I split from end to end, making a good opening, with a Farmer Miles' hooked castrating knife, and let out about ½ pint of thick fœtid pus, some coming out of the mouth and the other from the nostrils. When the heifer got up she had practically ceased snoring. Made an uninterrupted recovery, and was eventually sold. I much prefer to chloroform, as the animal does not struggle, and there is less fear of asphyxia or getting your hand badly bitten should the gag slip. I have never yet found a snorer that would pass the tuberculin test, so the abscess is evidently of tuberculin origin.

OBSCURE LAMENESS IN THE DOG.

By G. YATES, F.R.C.V.S.,
Harrow.

THE first case, an aged fox terrier having been knocked over by a motor car, I found upon examination to show all the symptoms of radial paralysis as met with in the horse. The elbow of the left foreleg was dropped, and lower than its fellow of the opposite side; the carpus was extended, and there was complete inability to maintain weight on that side, whilst there was not the slightest evidence of pain on manipulation.

The case was under treatment for about six weeks without any improvement, the scapular and caput muscles wasting away, the animal unable to use the limb, simply carrying it during progression. As the animal was an old favourite, and the condition not a painful one, the owner decided to let

it take its course, and it is to-day, after a period of about six months, exactly in the same condition, and suffers nothing in consequence.

The second case occurred in a fox terrier, also an aged one, but affecting the near hind leg. It was inadvertently trodden upon by its owner, a very heavy man, and showed immediate signs of lameness and pain. The latter soon passed off, but the leg became quite powerless, and dropped on that side; the muscles in time wasted away, the bony skeleton being well outlined. Similarly in this case treatment proved of no avail.

Remarks.—In neither case, after most careful and frequent examination could a fracture be detected, the damage, in my opinion, implicating an important nerve, although in the latter case, after being under treatment for about two months, a so-called veterinary chemist was said to have diagnosed a fracture, which had it been attended to earlier would have resulted in complete recovery. Fortunately, in both instances, I was very guarded as to prognosis, and probably the advanced age in both cases was responsible for their non-recovery.

General Articles.

URINARY CALCULI WITH A REPORT OF SIX CASES OPERATED AT THE UNIVERSITY HOSPITAL.

By J. H. SNOOK.

THE normal urine contains several salts in solution and under abnormal conditions (Lithuria) may contain an excess of the normal salts and possibly others not commonly found in the urine.

Depending on conditions, any one or more of these salts may be precipitated and deposited in the form of urinary calculi. A nucleus is necessary for the beginning of a calculus and this may be a mass of mucus, cell debris, blood clot, or other substance. On or in this nucleus the first precipitated salts are deposited and from this beginning it continues to grow by accretion. The rate of growth, which is at all times slow, is in accordance with the amount of salts present in the urine, and as this amount varies greatly at times the rate of growth necessarily varies. The variation in the kind of salts in the urine

from time to time will form alternate layers of the different kinds of salts.

As a calculus enlarges, especially if cystic, it causes irritation of the mucous membrane and this favours bacterial fermentation of the urine with ammonia production and an alkaline reaction. This alkalinity favours a precipitation of phosphates so that most large cystic calculi have an outer covering of these salts while the inner parts may be composed entirely of others. The density and hardness vary with the composition. Those composed of urates are not as hard as those containing calcium compounds.

Calculi of the horse and dog are usually single while those of cattle are most often multiple and in the form of irregular masses, commonly called sand, or gravel, depending on their size. They may occur anywhere along the urinary tract although the bladder is the most favourable location. They may also form in the renal pelvis and pass with the urinary current to other parts of the tract or possibly be expelled along the urine. Remaining in the kidneys they enlarge and assume the shape of the pelvis and in time gradually interfere with, and finally suppress, the flow of urine from the affected organ. Inasmuch as this condition is usually unilateral and of slow formation, few, if any, symptoms will be noticed. The compensatory hypertrophy of the other kidney makes possible the excretion of the normal amount of urine.

A small renal calculus passing into the ureters may lodge there and produce marked acute symptoms of retained urine since stoppage of one-half the flow so suddenly does not permit of compensatory action of the opposite organ. Both renal and ureteral calculi favour suppurative nephritis. However, these conditions are extremely rare, difficult to accurately diagnose in all animals, and subject to surgical treatment only in the smaller ones.

In the urinary bladder a calculus may grow to an immense size (20 oz.) They are easily diagnosed and, ordinarily, may be readily removed by surgical means. When single and of ordinary size they occur almost spherical, but the larger ones are usually irregularly elongated and flattened dorso-ventrally. This shape is due to a more rapid deposit of the salts on the lateral surfaces, or what would be the edges of the calculus as

this surface is at all times bathed with the urine. The ventral surface, in contact with the bladder walls, does not receive as much of the deposit of salts. The dorsal surface may not, for a greater part of the time be covered with urine, as the irritation of large calculi induce frequent micturition. This rapid deposit at the edges also accounts for greater roughness usually noticed at this part of the surface and this roughness at the edges greatly increases the difficulty of removal. This may be overcome to some extent by placing lithotomy forceps over the edges of the calculus rather than over the sides. The forceps placed over the edge will give a greater total circumference than if placed on the sides, but this slight increase in circumference will be offset by the ease with which the urethral mucosa slips over the smooth surface of the forceps as compared to that of the rough calculus.

In the horse, cystic calculi cause little if any trouble until they reach the size of a small hen's egg. From that size up they induce gradual increasing symptoms of irritation indicated by frequent micturition and tenesmus. This is increased when the animal is exercised and blood often passes with the urine, during or immediately following exercise, which indicates injury to the cystic mucosa by the calculus. This constant irritation results in a chronic thickening of the bladder wall and must be taken into consideration when estimating the size of the calculus per rectum.

If a calculus of just the proper size passes into the urethra it may lodge and will interfere with or prevent the passage of urine. The point of most common lodgement varies in the different animals owing to the arrangement of the urethra. The ischial flexure of all animals offers some chance for lodgement but the pressure of the urine usually forces them beyond this point. In the horse the common location is in the dilatation just above the processus urethra, which is constricted sufficiently to retain them. In the ox they stop in the sigmoid flexure, while in the dog they locate just above the os penis.

A urethral calculus will produce acute symptoms owing to a sudden blocking of the urethra. Some cases permit the urine to be voided very slowly and this may continue some time without becoming serious. Usually the urine continues to dribble very slowly and the bladder is distended. The animal makes frequent attempts to urinate and shows pain not unlike that of indigestion. Cessation of pain after thirty-six to forty-eight hours indicates over-distension of the bladder with partial rupture and uremia. Diagnosis of an obstruction is

easy from the distended urethra above and a calculus may be recognized with a metal catheter or probe.

In all cases where one calculus is found it is advisable to palpate bladder for others, and if found remove them to prevent a recurrence of the trouble. This is especially true in the ox, where they are usually multiple and form quite rapidly. A case is reported in which the growth was so rapid that they would pass into and obstruct the urethra so often that it was necessary after two or three operations for removal to maintain an opening at the ischial flexure until the animal could be prepared for slaughter.

A calculus may be removed from the distal end of the urethra of the horse by manipulation. In the ox and dog, because of a higher location, an incision must be made directly over the enlargement and just large enough to remove it. The wound need not be sutured unless quite large, and then it may be closed only at the upper part and an opening left at the left lower commissure for drainage and the skin incised lower than the urethra to prevent retention of the urine between the skin and urethra.

An examination for calculi is indicated in all cases of urinary disturbance, and especially in all chronic cases the bladder must be carefully examined by rectal palpation. It has been our observation in most cases of this kind with beginners that the hand was inserted too far into the rectum and the bladder over reached. The calculus, by reason of its weight, lies in the depression in the floor of the pelvic canal farther posterior than the normal position occupied by the bladder when filled with urine. Also in these cases the bladder will contain very little urine owing to frequent micturition.

Operation. Cystic calculi 2½ inches in diameter or less occasion very little difficulty in removal, but the danger of operation and difficulty increases in proportion to the size of the stone. Complete anæsthesia favours the operation by relaxing the muscles. Insert a catheter and perform urethrotomy at the ischial arch on the medium line and enlarge the incision upward to the length of 2 inches. Enlarge later if necessary. Insert lithotomy forceps through the opening into the bladder with one hand in the rectum. By careful manipulation place the forceps, if the calculus be flattened, over the edge. Rotate the forceps while holding the calculus loosely to free any part of its folds that may be caught. Attempting to withdraw the calculus it will readily pass into the urethra and be retarded there by catching in the folds of the urethral mucosa. If it

be impossible to remove it on this account incise the folds of the urethra upward, being careful not to injure the rectum. It is surprising how large a calculus can be readily removed.

Examine the bladder for others, then irrigate with warm antiseptic solution. It is necessary to suture the incision but when the animal is standing the incision in the skin must be lowest to prevent retention of urine just under the skin.

Healing occurs readily and with very little swelling.

Case No. 1. C.B. No. 3396, January 28, 1916. Calculus No. 4. Bay gelding, nine years old, weight 1,200. Condition excellent. Animal sent to hospital by neighbouring practitioner. Two months previous owner noticed frequent urination. Medical treatment was given without examination. An increase in the symptoms, this time blood being passed after exercise, induced the veterinarian to examine the bladder and a calculus was diagnosed. The animal was dieted for twenty-four hours, placed on the table and the calculus removed under chloroform anæsthesia in about twenty minutes. Recovery occurred without incident. Swelling or suppuration of the wound was scarcely noticeable and the animal taken home in five days. This calculus weighed $7\frac{3}{4}$ ounces and measured $6\frac{3}{8}$ inches in circumference.

Case No. 2. C.B. No. 2742, May 13, 1914. Calculus No. 1. Bay gelding, twelve years old, weight 1050. Condition fair. Owner sent animal to hospital. Seemed very much depressed, not eating very well. History indicated urinary disturbance. Rectal examination revealed a large calculus. This was removed with same precautions as No. 1 but with considerable difficulty owing to the irregular shape of the calculus. The same care was given the patient but death occurred on the fourth day, and post-mortem examination revealed extensive suppurative nephritis involving both kidneys. The calculus weighed 8 ounces, and measured $6\frac{7}{8}$ inches in circumference.

Case No. 3. C.B. No 1762, February 18, 1913. Calculus No. 2. Light Brown gelding, thirteen years old. Condition good. Owner sent animal to hospital after noticing irregular urination and hematuria. A large calculus estimated to be as large as a baseball was diagnosed. This was removed on the second day with less trouble than in case No. 2.

The wound was not sutured. Micturition, at first quite frequent, soon became regular and healing occurred with slight excess granulation. This was removed and the patient discharged in one week. This calculus weighed 12½ ounces and smallest circumference was 8¼ inches.

Cases Nos. 4 and 5 were operated on without incident, both being removed through the incision as first made without effort. No. 4 weighed 3 ounces and No. 5 4½ ounces. Recovery was prompt.

Case No. 6. French poodle, female, age four years, weight ten pounds. Condition good. Owner presented animal at the hospital. History indicated a gradually increasing urinary disturbance for six months past. The animal was observed to frequently pass small amounts of urine. Palpation of the abdominal wall revealed an enlargement in the region of the bladder. A metal catheter was passed and tapped against the calculus thus indicating its character.

Under complete anæsthesia it was removed through an incision in the median line just anterior to the pelvis and a longitudinal one through the bladder wall. This latter incision was closed with one row of continuous sutures and over this Lembert sutures. Recovery was prompt and the patient discharged in one week.

This calculus weighed 1¾ ounces and measured about 3⅝ inches in diameter. It was almost spherical. The surface was rough.—*Veterinary Alumni Quarterly, Ohio State University.*

*ON CERTAIN RELATIONS OF THE LOWER ANIMALS TO HUMAN DISEASE.

By DAVID JOHN DAVIS,
Chicago Ill.

"THE study of comparative pathology, it would seem, should occupy a more prominent place in the curricula of our universities and medical schools than it has in the past. When we consider the fundamental character of the studies in this field of pathology—the work of Jenner, of Pasteur, of Koch, of Theobald Smith and especially of a great group of investigators

*Read at the Quarter-Centennial of the University of Chicago, Departmental Conference in Pathology, June 6, 1916. Abst. from "Science," Vol. XLIV., No. 1132, Sept. 8, 1916, pp. 337.

in recent years on cancer and on tropical diseases in man and animals—the truth seems evident that in the study of disease and in its presentation to students, such an important field should not be slighted. Our study of disease in medical and veterinary institutions should be at least as broad and as comparative as is the study of zoology or botany. In order to understand the natural history of many diseases comparative studies are absolutely necessary. It would undoubtedly be advantageous both from a human as well as from a scientific standpoint if our medical schools and hospitals, our veterinary hospitals and even our cat and dog hospitals and other places for the care of sick animals could all be concentrated in one institution for the broad study of disease. This indeed is now being attempted in certain institutions and no doubt will result in a broader conception of pathology."

Modes of transmission are summarized as follows:—

"I. Infection in man may occur through simple contact with diseased animals.

"II. The infectious agent may be carried mechanically from person to person or from animal to person through food or otherwise by a second animal.

"III. The animal may, through a bite, produce a lesion into which the infectious agent is transferred, as in rabies and especially in the blood-sucking insect diseases.

"IV. The parasite may be transmitted to man through the meat of lower animals used as food.

"V. The infectious agent may be transmitted to man through the secretions of the lower animals.

"VI. The infectious agent may enter one of the lower animals in which it passes through a regular phase or completes a cycle and then, usually through a bite of the animal, is transmitted to man."

HUMAN DISEASES CARRIED.

1. By the dog: Rabies, foot-and-mouth disease, helminthiasis, flukes, tapeworms (especially *Taenia echinococcus*), infantile splenomegaly (from dogs through fleas), trypanosomiasis (*T. gambiense*), mange, fleas and ticks, ringworm, favus.

2. By the cow: Tuberculosis, actinomycosis, anthrax, cowpox, tetanus (through vaccine), foot-and-mouth disease, septic

sore throat, rabies, pus infections, tenia saginata, milk sickness, paratyphoid fever.

3. By the horse: Glanders, rabies, tetanus, sporotrichosis, anaphylaxis, serum disease, odor of horses.

4. By swine: Trichiniasis, tuberculosis, anthrax, cestodes (especially *T. solium*), trematodes.

5. By sheep: Anthrax, tuberculosis.

6. By goats: Malta fever, tuberculosis.

7. By the antelope: Sleeping sickness.

8. By the cat: Rabies, cestodes, trematodes, favus, ringworm.

9. By rats: Rat bite fever, bubonic plague (through fleas), trichiniasis (through hog to man).

10. By ground squirrels: Bubonic plague.

11. By birds: Psittacosis (from parrot).

12. By fish: Tape worms.

13. By arthropods, chiefly insects: Mosquitoes: Yellow fever, Malaria fever, Dengue fever, Filariasis; Fleas: Bubonic plague, infantile splenomegaly; Ticks and mites: Rocky Mountain fever, relapsing fever (African), tick fever of Miana, Japanese flood fever; Lice: Typhus fever, relapsing fever (*Spirochaeta obermeieri*); Bed bugs: Kala azar; Flies: Sandfly fever, sleeping sickness (tse-tse fly), typhoid fever and other infections carried mechanically; Crustaceans (water flea): Guinea worm infection (dracunculosis); Oysters, clams, etc., typhoid fever; Snails; Trematode infections (especially bilharziosis).

The control of diseases transmissible from the lower forms of life to man must include a careful consideration of the following points:—

"1. A lower animal may be the only agency in the spread of a disease.

"2. Several different species of lower animals may be concerned in the transmission of the disease.

"3. The lower animal may be a 'healthy' carrier. That is, the infectious agent though perhaps highly virulent to man may not cause the animal to become sick.

"4. The lower animal may be a diseased 'carrier'; that is, the infectious agent may cause the lower animal to become sick."

Reichel.—*Journal American Veterinary Medical Association.*

Abstracts.

*DISEASE SET UP IN VARIOUS ANIMALS BY *T. brucei*, Zululand Strain.

Horse.—The Commission had no opportunity of studying this strain in the horse, but Mr. Shilston states that one horse inoculated by him at Pietermaritzburg died in 35 days with typical symptoms of Nagana.

Ox.—Six oxen were inoculated, but only two of these at any time showed trypanosomes in their blood. One of these died after 310 days, while the other is still alive at the end of a year. This animal has evidently recovered, as it appears sleek and healthy. The action of the Zululand strain is therefore the same as that of the trypanosome causing disease in man in Nyasaland; neither of them show any marked power of producing serious disease in cattle.

Goat.—Seven goats were inoculated with this strain. Four died, on an average, in 77.2 days (45 to 116). The remaining three proved refractory. No œdema of face or corneal opacity was noted in any of the goats. The Zululand strain seems to have less action on goats than the Nyasaland trypanosome, but the number of experiments is small. In the latter the duration of the disease was 41.8 days (19 to 72).

Sheep.—No experiments were made with these animals in Nyasaland, as it was found impossible to procure them from the natives.

Monkey.—Eight monkeys died, on an average, in 29.2 days (8 to 65). The trypanosomes were always present in the blood, sometimes in enormous numbers. In no case was œdema of the face or corneal opacity noted. After death enlargement of the spleen and liver, gelatinous infiltration at the base of the heart, and hæmorrhages in the epicardium were found.

Dog.—Seventeen dogs were inoculated. All died, on an average, in 18.5 days (12 to 26). In eight dogs blindness caused by opacity of the cornea was a prominent symptom, and in two swellings of the limbs were observed.

*Extract from paper by D. Bruce, A. Hamerton, D. Watson and Lady Bruce, in the "Journal of the R.A.M.C."

Rabbit.—As only two rabbits were available at Kasu, six experiments reported by Mr. Shilston are added. Eight rabbits died on an average, in 32.7 days (27 to 39). The course of the disease in the Kasu rabbits was the same as that described in a former paper[1] as being typical of Nagana.

Guinea-pig.—This animal is less affected by the disease than the rabbit. Ten were used; all took the disease and died, but four required to be inoculated more than once. They died, on an average, in 43.7 days (15 to 89). No prominent symptoms, such as are seen in the rabbit, occur in the guinea-pig.

Rat.—Twenty-three were inoculated and died, on an average, in 27 days (10 to 58), with their blood swarming with trypanosomes and their spleens enormously enlarged.

CONCLUSION.

The pathogenic action of T. brucei, Zululand strain, 1913, on various animals is so similar, not only in regard to the symptoms during life but also in the post-mortem appearances and rate of mortality, to that of the trypanosome causing disease in man in Nyasaland, that it affords another proof that these two trypanosomes are identical.

TO RAISE A FALLEN HORSE WITH A ROPE.

By A. C. WIGHT.

AT the recent Detroit meeting of the A.V.M.A., in the discussion among a number of veterinarians, there was much interest expressed in a method which I have devised for raising a horse from the recumbent position without the use of a sling, but with only the rope to be found in any barn or on any farm. This method may have been used and described by others, but I am unaware of the fact, so I thought that the profession might be interested in the method.

The only articles required are a block and tackle of sufficient strength to raise the horse, and thirty feet or more of rope, one-half inch or more in thickness. These items can be easily procured anywhere. The block is fastened to the ceiling or any other place above the horse in the usual manner.

The rope is handled as follows, first being doubled:—

1. Pass the doubled end of the rope over the head backward to where the collar rests on the neck.

2. Pass free ends of the rope between the front legs, crossing at once, ust before it goes between the legs.

3. Pass lower rope under body, so that it emerges just posterior to the withers.

4. Lay upper rope over thorax, so as to cross lower rope at this point.

5. Bring lower rope over body and between hind legs.

6. Pass upper rope under body in a position to correspond to the other rope, bringing it back between the hind legs. Cross the ropes at this point.

7. Bring both ropes up over buttocks, one on each side of the tail.

8. Pass forward along the spinal column under the ropes where they cross on the back, and tie to point where the rope lies on the top of the neck.

9. Insert hook of block at point where the ropes passing over the back cross, being careful to engage all the ropes at this point, namely, the single strands crossing to go between the hind limbs and the double strand coming from each side of the tail to the neck.

All ropes should be drawn as tightly as possible before the knot is tied, so that all slack is taken up.

This sling is very easily applied (one man can do it at a pinch) and the horse in his struggles cannot fall out of it. The body is always right side up, neither end higher than the other, and the feet are always in a position so that they can be utilized to the best advantage. Contrary to this, a sling is hard to apply, it requiring considerable strength to pass a canvas under a horse; the accessory harness cannot be easily adjusted; in the process of raising, the horse will lunge and fall out or turn on his side; and, furthermore, as is not the case with the rope sling, the broad belly-band of canvas so constricts the thorax that in case the horse does not at once attempt to use his legs, he must be let down for fear of suffocation. This fear of suffocation is one objection to the use of the chain block, which is slow in its action, whereas with

the rope sling, this feature can be disregarded, as the ropes do not constrict the lungs sufficiently to produce suffocation. I had one horse which hung for forty minutes before he decided to stand up, without appreciable discomfort to the respiration.

Once the practitioner tries his method, he will nevermore use his sling for this procedure, but will raise the horse in half the time, and with a minimum of discomfort, both to the horse and to himself.—*American Journal of V.M.*

BILE AND URAEMIC POISONING IN A MARE DUE TO LARVAE OF GASTROPHILUS EQUI.

By H. P. BONNIKSON, Ferndale, Calif.

A SEVEN-year-old Percheron mare, weighing 1,500 lbs., in fine condition, had been used at light farm work, and was nursing a two-months-old colt.

May 24th she was worked for a few hours on a harrow, when the owner noted considerable depression and weakness.

May 25th she was turned at pasture and was found in a comatose condition during the forenoon. About noon she regained her feet and staggered about the pasture indifferent to the colt.

May 26th. Symptoms, 10 a.m. The most prominent symptom was vertigo bordering on unconsciousness and convulsions. She would regain her feet and stagger about with head near the ground; occasionally the head was struck with the fore-feet, and finally she would fall prostrate on her side, or backwards, striking the head heavily on the ground, and developed severe convulsions. This occurred repeatedly, the patient becoming bathed in perspiration, and blood gushing freely from both nostrils. Sensibility was greatly increased, even to the extent that the insertion of a thermometer would throw her into convulsions. After considerable time and hard labour the mare was tied down securely to prevent her from killing herself, as well as the colt. Attempts were made to quiet her with narcotics (Three H.M.C. tablets, formula B—Abbott), Cannabis Indica per jugular vein (10 c.c.), without

results. The convulsions increased in severity. P. 96, weak. R. 54, Cheyne-Stokes. T. 102.2. Marked congestion of conjunctival, m.m., pupils dilated. Lips and nostrils swollen; Mucous membranes of oral and nasal cavities darkly congested, having a tinge of green; tongue thickly coated and dark-green in colour. Death in general convulsions at 4.30 p.m. No diagnosis.

Autopsy.—On opening the abdomen, the mesentery, omentum, and all abdominal organs were very icteric. The liver and hepatic duct were distended with bile, bile capillaries and liver engorged with bile, plainly seen on the surface, and on cut section. Kidneys enlarged. Intestines darkly congested, probably due to blocking of the portal system. Icteric discolouration of the pericardium. About five inches from the pylorus of the stomach the duodenum was enlarged about the size of two fists. When cut open the enlargement was found to be a mass of Larvae of Gastrophilus Equi, or horse bots. In the orifice of the bile-duct where it opens into the duodenal ampulla was found lodged a large bot, which evidently caused complete blocking of the duct. In the stomach were also found many bots attached to the mucosa.

Conclusions.—The cause of the attack was mechanical: namely, the mass of bots in the duodenum, and the single one in the bile duct. Blocking the duct caused absorption, and hepatogenous icterus. The early symptoms of indifference, general depression, stupor, somnolence, coma, staggering gait, etc., were due to the narcotic effect of absorbed bile. The later symptoms of increased pulse, respiration and temperature, increased sensibility, vertigo, convulsions, unconsciousness, etc., were due to derangement of the kidneys, producing acute uremia, which affected the central nervous system. *Cornell Veterinarian.*

Translation.

PARASITOLOGY.

Research on the Evolution of Hypoderma Bovis and Method of Destroying it.

By A. LUCET.

Warbles in cattle are due to the development in their system of the larvæ of two diptera: hypoderma bovis and hypoderma lineatum. These pests cause an annual loss in France alone of ten million francs to agriculture and the tanneries. Affected subjects present in the spring, on the back and loins, subcutaneous nodular swellings each enclosing a larva and allowing to escape, by an opening in the skin which covers them, an abundant sero-purulent liquid. The losses occasioned by this parasite are due to the hindrance it causes to growth, fattening, and the production of milk, to the depreciation of the carcase as flesh, and to perforations which considerably reduce the qualities of the skins. The author publishes the result of researches undertaken since 1912 at the laboratory of comparative pathology of the Museum of the Academie des Sciences, under the auspices of the Minister of Agriculture. Hypoderma bovis has been the only species studied. In the climate prevailing in and around Paris, the larvæ of hypoderma bovis leave the cattle that they infest in May, June and July, but, above all in May and June, and particularly in the morning. Ninety-five per cent. of the larvæ which have migrated from the subjects attacked transform themselves into pupæ in from 24 to 36 hours if one places them on the soil or in the laboratory on wadding, grass, or earth. Any modification applied to natural migration or to the conditions cited results in failure.

Their passage to the pupal stage is brought about on the surface of the soil, contrary to the assertion of German authors. Nymphosis had a duration of from 30 to 35 days on an average. During their existence the hypodermæ have as their enemies little rodents, the birds, and the insects of which a certain number eat the adults, their larvæ and their pupæ. The spores of different inferior fungi spread over the soil can penetrate their chitinous coverings, vegetate on their chrysalides and kill them.

Breeding in the laboratory at ordinary temperatures appears to give the best results, for it suppresses the causes of

destruction arising on the soil. Hatching takes place at all hours of the day, and not, as asserted by the Germans, only in the morning. The hypoderma breaks its enveloping membrane at the level of the neck, frees itself by to and fro movements, and is ready to fly in a few minutes.

In the fly stage the hypoderma bovis is only met with from the middle of June to the commencement of September. The average duration of life observed has been from 4 to 5 days. Although these experiences have been made at a cold and damp period of the year one can affirm that this diptera only lives the length of time necessary for pairing and laying; its buccal apparatus is rudimentary, and it does not seem to eat. It flies when the weather is warm, in rain it remains quiescent, and from its hatching to its death does not leave the place it adopts. Its flight is short; there is reason to believe that it wanders little from the places where it is born. The female encloses in her abdomen a considerable number of eggs (343 to 372). These eggs are deposited on the surface of the skin and on the hairs of cattle, and not in the depths of the integument.

Neither pairing nor laying can be observed, but the anatomical structure of the oviscapt is composed of chitinous elements united by a supple membrane enabling its segments to telescope.

Although Glaeser affirms that the panic of cattle is attributable to this insect, the author has seen a heifer live for several days in a cage *ad hoc* with seven of these diptera without ever showing any disquietude.

The eggs, white, ellipsoid, little compressed and of a length of about 1 to 15 millimetres, are prolonged at one of their extremities by a jointed stalk, terminated by a two-lobed appendix in the form of gutter, with the aid of which they are probably fixed at the moment of being layed.

German methods of destroying the larvæ appear to be illusory, troublesome and complicated. As a result of experiment on the larvæ of 81 nodosities, it was found that the injections of a few minims of pure or diluted tincture of iodine into the swellings killed the larvæ and caused their complete absorption. The death of the larvæ in the lesions was not harmful, and their absorption was possible without any subsequent suppuration.—*Revue Générale de Medecine Vétérinaire*

G.M.

Correspondence.

PARACENTESIS ABDOMINIS.

To the Editor of THE VETERINARY JOURNAL.

SIR,—In replying to your correspondent, "Old Practitioner," I beg to state that the operation of Paracentesis Abdominis is not, in my experience, done as often as it should be.

I have come to this conclusion as a result of an extended enquiry. I did not mean that the operation would cure torsion of the intestine. What I meant to convey was that for it to be of any benefit it should be done early in the attack. If a twist has taken place tapping is of no use.

I did not go to sleep until after I had tapped the mare. I only mention the sleeping because it was the means of demonstrating beyond a doubt that the canula can be left in a whole night without risk. The case I named was the first on record, showing the length of time the canula could be allowed to remain.

The animals do not knock about the box after being operated on, that is, if punctured in the right place, and in my opinion the place is that portion of the flank immediately over the pelvic flexure of the colon.

I can quite understand their knocking about the box after being punctured on both sides, and repeatedly. No wonder "Old Practitioner" has seen hundreds die. One case I mentioned I punctured the abdomen a few minutes before 8 p.m. I removed the canula at 10.30 a.m. the following morning. The mare kept perfectly still the whole night, and recovered. This was some years ago. I see her frequently; she works in the Tramway water cart. As to the tape being the limit, what is the harm in using it? In the old canulas used in cattle practice, at the cup shape extremity there was a slit made for the passage of the tape to maintain the canula in position. The canula can be allowed to remain in position at convenience. If for a cow, why not for a horse? Should the canula fall out the tape easily indicates its position in the bedding, otherwise it would probably be lost, it need not be. I have never seen the bowel torn. How am I to see it? I have searched at times, post-mortem, and failed to find the puncture in the intestine with any degree of certainty.

What is meant by the canula rocking about all over the place? What place? There is very little, if any, injury done, and the intestines will stand more than we think. See paper in December VETERINARY JOURNAL on Sand Colic in France.

The atmosphere of the place might enter the bowel and possibly do harm. What proof is there of this? The gas from the intestines being warmer than the outside expands according to the law of gases, and heat prevents the cold air from passing in An abscess may follow a perfectly clean instrument, one placed in hot water prior to its use. This is not frequent. The horse in the case I mentioned was a farm horse at grass, so it should have as much ozone as it wanted in the month of July.

It is best, in my opinion, to open all abscesses when pointing or ripe. I see no objection in the expression, and if done too soon it has to be repeated. There is no advantage in this. How many colts have a "strangle" abscess, for instance, which opens of itself when ripe. As regards the two mares which were not treated, and which would possibly have recovered had they been "tapped" early enough, they were dying when seen. The operation was of no use.

"Old Practitioner" says he holds no brief for the farrier. He need not. I will. He is a very useful man indeed, and one who has used his observation to good effect. I meant no disparagement.

Now as to the "Colic" drinks, the idea is principally as a stimulant. Anodyne medicine for colic is unsatisfactory. I have found the draught convenient in use, and beneficial in effect, as far as I can judge. I have given and caused to be given a good many, but how it goes to work after the animal has swallowed it I cannot say. I am often asked by my clients to send a dozen colic drinks for their own convenience and to save time, and as far as I can see their use gives satisfaction, and owners of horses please me when they are used instead of others. Their monetary value is very useful when I receive it. Amongst other reasons why I became a veterinary surgeon, the chief was I wanted to earn a living. I have done so.

XUM

My drinks do not belong to the Cure-All-Class. I gave the formula, so they are not empiric.

In treatment one always treats symptoms as they arise. How are you to give the disease a name without symptoms?

Medicine is an art, not a science.

I have pleasure in replying to "Old Practitioner," and wish to thank him for his criticism.

Yours faithfully,

Plymouth, P. G. BOND.

Notice.

THE "INALTER" VIAL FOR SERUMS.

THE Anglo-French Drug Company has done good service in bringing out a serum which does not deteriorate with keeping, and can always be quickly prepared ready for use. The Antistreptococcic serum, a sample of which we have received, is perhaps the most useful one for the veterinary practitioner. Conditions are almost constantly arising in our patients where the injection of this serum will prove beneficial. To name a few diseased states where it may be employed we may mention endometritis, influenza, poll evil, pyæmia, septicæmia and strangles.

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G.M.

Reviews.

Fleming's Practical Horse-Shoeing. Eleventh Edition, revised and edited by J. Macqueen, F.R.C.V.S., Professor at the Royal Veterinary College, London. Crown octavo—pp. vii. + 132—figures in the text, 45; price 3s. net, postage 3d. Publishers: Baillière, Tindall and Cox, 8, Henrietta Street, London, W.C.

THIS little handbook, containing a knowledge of the essentials and application of the farriers' craft, has been brought well up to date by Prof. J. Macqueen. Originally written by the late Dr. Fleming as a manual of instruction for regimental farriers, it may be classed as a standard work on the subject, the usefulness of which is indicated by the fact that this is the eleventh edition from the press. It is written in simple language, and well arranged so that the reader may gain a gradual and complete grasp of the right way to go about the shoeing of horses. Commencing with a few pages on "The Importance of the Art of Horse-Shoeing," successive chapters deal with the Anatomy of the Horse's Foot, the Hoof, its Growth, Shoeing, Preparing the Hoof, the Shoe, Preplantar and Winter Shoeing, Shoeing for Defects in Limbs or Feet, Management of the Horse's Foot, Streets and Roads, Instruction of Farriers. The book does not deal with pathological shoeing. The illustrations are good and quite sufficient for the purpose. Reasonable and sensible advice is given on the old controversy as to whether the shoe must be fitted to the foot or the foot to the shoe. We wish that all horse-owners would take to heart the lines on the injury inflicted by over-heavy shoes. Commercialism and rule-of-thumbism swear by the dogma that every horse's shoes should last a month, and the farrier who doesn't play up to the fantastic idea suffers accordingly. It may be usefully remembered that the wall of the foot in good hoofs does not exceed three-eighths of an inch in thickness (it is often perceptibly thinner), hence a point that carries weight with reasonable people in cases where nails are occasionally wrongly driven. Those who know the price of fullered iron at present will be glad to read the views on the uselessness of the fullered shoe.

We think that useful chapters might have been added to

the work bearing more particularly on cart-horse shoeing, and the use of pads, but it must be remembered that the manual is written primarily as a book of instruction for Army farriers, and it always seems to be presumed (we are inclined to think not always correctly, at any rate nowadays) that there is no use for heavy horses in the army, and consequently no need for printed matter on the subject. At a time when would-be farriers are increasing, perhaps faster than ever before, the importance of this book is self-evident, and another edition should soon be called for. The volume is one of the handiest and best we have as a guide to horse-shoeing, and although written for the farrier, is very valuable to veterinary students, farmers and horse-owners (who have open minds on the subject of horse-shoeing), and the veterinary surgeon himself may read it with pleasure and profit.

G.M.

Lameness of the Horse. By J. V. Lacroix, D.V.S., Professor of Surgery, the Kansas City Veterinary College, Author of "Animal Castration"—illustrated. Published by the "American Journal of Veterinary Medicine," Chicago, 1916.

A GOOD knowledge of how to detect and treat lameness in the horse is of primary importance to the veterinary surgeon, and here we have a book that has hardly been excelled as an instructor on the subject. The plan of the work is admirable, the matter is comprehensive, and the author possesses in a high degree fine qualities of exposition and lucidity. We think we have never read a finer chapter than the one on "Diagnostic Principles," in regard to the discovery of lameness and its seat, in any book on the subject, and throughout the volume the same high standard of thoroughness and broad vision are shown. If some of us find out the seat of lameness quicker than others, yet he who follows Dr. Lacroix's principles will not err by superficiality, and will take the best measures to come to a right conclusion.

No diffuse verbiage mars the description of the various lamenesses mentioned in the book, their anatomy, etiology, symptoms and treatment. The two main sections of lameness are those of the fore and hind limbs, and no scant survey is taken of the field covered. The illustrations in the book

are numerous and adequate. There are one or two fresh methods of treating lameness considered, notably those dealing with Dr. Cochran's method of shoeing horses with laminitis, and the manner in which Joseph Hughes, M.R.C.V.S., deals with quittor.

Opinions may differ as to the treatment to be adopted in cases of lameness or injuries, but few can find fault with the author's conclusions as to procedure—just one or two matters seem, however, to call for comment as the result of our experience. We think that where there is effusion of liquid in front of the knee in carpitis that opening the hygroma is good practice, and far more safe than opening the swelling in the case of capped hocks. We have had far better results in unnerving in case of ringbone lameness than in that of chronic laminitis, and indeed results are likely to be so disastrous in the latter case that we never advise it. The treatment of open joint is a valuable addition to the literature on the subject, and we are glad to see an extract from Mr. J. N. Frost's article given. We think, however, that the benefit of continuous irrigation of open joints at intervals with cold water ought to be accentuated in cases where it can be managed. We have confidence in recommending this volume to all veterinary surgeons who desire to extend their knowledge of lameness, its diagnosis and treatment. After they have read it they will be in a better position to deal with the events of practice. It is a work that will appeal to the specialist no less than to the general practitioner.

G.M.

Annual Report on the Civil Veterinary Department, United Provinces, 1916. Printed at Allahabad by the Supdt. Gov. Press, United Provinces.

MR. E. W. OLIVER, M.R.C.V.S., F.Z.S., sends us the Annual Report of the Department, prepared by him, and the Government review thereon. The Honourable Mr. A. W Pim, Secretary to the Government, commends Mr. Oliver for his contagious energy and the efficient control and activity exercised by him, and throughout the Report there is evidence that great strenuousness and advance have been prevalent in many of the operations undertaken by the chief and his staff. The deaths from contagious diseases have decreased during

the year by nearly two-thirds from the figure of the preceding year. Rinderpest has shown the greatest reduction.

The veterinary hospitals and dispensaries have been increased from 61 to 77, and the stud bulls and buffaloes from 116 to 145. Breeding on more scientific lines is taking place, and being stimulated by the giving of local awards of substantial prizes to the best specimens of young stock. The breeding farms for cattle, of which there are two, have done good work, and Shorthorn and Ayrshire bulls and cows have been imported with the idea of building up a strain of cattle that will stand the Indian climate, and give a permanently increased milk yield. There were 65 stallions belonging to the department operating in various districts, and most of them retained their high standard and repute as foal getters.

The veterinary strength of the subordinate establishments would have been increased by 60 or 70 assistants, but for the outbreak of war. The provincial staffs have worked very hard, especially in undertaking, often at short notice, inoculations and investigations. Mr. C. W. Wilson, M.R.C.V.S., is specially commended for the help he has given to his chief. An all-round advance has been shown in every phase of the Department's work and the ground-work has been laid, and the reins grasped for further gratifying progress in animal protection, therapy and improvement.

G.M.

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